UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,606	08/02/2001	Mats Dahlback	19378.0011	6441

7590 02/24/2003

Swidler Berlin Shereff Friedman
Suite 300
3000 K Street N W
Washington, DC 20007

EXAMINER
WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 02/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/857,606	Applicant(s) DAHLBACK ET AL.	
	Examiner Harry D Wilkins, III	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 January 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-15 and 17-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-15 and 17-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The objection to the claims has been withdrawn in view of the amendment to the claims.

2. Isobe et al (US 6,125,161) has been disqualified as prior art under 35 USC 102(e) by the filing of a certified English translation of the priority document, thus establishing the priority date of the present application at 11 December 1998. Therefore, any rejections based on this reference have been withdrawn.

3. The rejections under 35 USC 102 and 103 based on Mardon et al (US 5,940,464) have been withdrawn in view of the amendment of the claimed range of Sn.

4. The rejections under 35 USC 102 and 103 based on Jeong et al (US 5,985,211) have been withdrawn in view of the amendment of the claimed range of Nb.

5. The rejections under 35 USC 102 and 103 based on Garde et al (US 5,211,774) have been withdrawn in view of the amendment of the claimed range of Nb.

6. The rejection under 35 USC 102 only based on Anada et al (JP 02-159336) has been withdrawn.

7. The rejection under 35 USC 102 only based on Nomoto et al (JP 08-067954) has been withdrawn.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 13 and 17-26 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Mardon et al (US 5,023,048).

Mardon et al anticipates the invention as claimed. Mardon et al teach (see abstract) a Zr-alloy that contains 0.35-0.65 wt% Sn, 0.20-0.65 wt% Fe and 0.35-0.65 wt% Nb. This composition overlaps the presently claimed range at 0.65 wt% Sn, 0.3-0.6 wt% Fe and at 0.65 wt% Nb. See MPEP 2131.03. Regarding the presence of other elements in the composition of Mardon et al (oxygen), the present claim recites a composition "comprising", which is defined as leaving the composition open to other elements, even in major amounts. See MPEP 2111.03.

Regarding claims 17 and 19, Mardon et al teaches (see abstract and title) that the alloy is used as a fuel rod sheath in a nuclear reactor.

Regarding claims 18 and 20, Mardon et al teaches (see abstract) that the alloy is used as a fuel rod sheath, which is part of a nuclear fuel assembly.

Regarding claims 21 and 24, Mardon et al teaches (see abstract) that the alloy is used as a fuel rod sheath, which is a cladding (see Figure).

Regarding claims 22, 23, 25 and 26, Mardon et al teaches (see col 2, lines 55-59) that the inner tubular layer (see Figure) is made of a Zr-alloy of conventional type. Conventional inner layers were made from pure Zr or a Zr-0.4Fe alloy (for support see Van Swam at col 7, lines 45-49 and Figure 2B). The Zr or Zr-0.4Fe alloy possess less strength, and thus, less ductility, than the alloy of Mardon et al (for support see Garde et al '308 at col 4, lines 40-44).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 13-15 and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomoto et al (JP 08-067954).

Nomoto et al teach (see English abstract) a Zr-alloy that contains 0-1.0 wt% Nb, 0.4-1.7 wt% Sn and 0.25-0.75 wt% Fe. The range of Nb overlaps the presently claimed range at 0.65-1.0 wt%. The ranges of Sn and Fe taught by Nomoto et al are broader than the presently claimed range. However, it would have been within the expected skill of a routineer in the art to have optimized the composition within the broad ranges disclosed by Nomoto et al because Sn and Fe were known to affect the strength and corrosion resistance of the alloy (see paragraphs 14 and 15 of machine translation). Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. In re Aller et al (CCPA 1955) 220 F2d 454, 105 USPQ 233. Only result-effective variables can be optimized. In re Antonie 559 F2d 618, 195 USPQ 6 (CCPA 1977). See MPEP 2144.05 II.

Regarding claim 14, Nomoto et al teach (see English abstract) that the alloy contains 0-0.10 wt% Ni.

Regarding claim 15, Nomoto et al teach (see English abstract) that the alloy contains 0.05-0.30 wt% Cr.

Regarding claims 17-21 and 24, Nomoto et al teach (see paragraph 6 of machine translation) that the alloy is used as a nuclear fuel covering spool. This means that the alloy is used as a nuclear fuel rod cladding, which is part of a nuclear fuel assembly.

Regarding claims 22, 23, 25 and 26, Nomoto et al teach (see paragraph 6 of machine translation) that the alloy is used as a nuclear fuel covering spool (i.e.-fuel rod cladding). Conventional fuel rod claddings have multiple layers where the inner-most layer is made of a pure Zr or a Zr-0.4Fe alloy (for support see Van Swam at col 7, lines 45-49 and Figure 2B). The Zr or Zr-0.4Fe alloy possess less strength, and thus, less ductility, than the alloy of Nomoto et al (for support see Garde et al '308 at col 4, lines 40-44).

12. Claims 13-15 and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anada et al (JP 02-159336).

Anada et al teach (see English abstract) a Zr-alloy that contains 0.05-1.5 wt% Nb, 0.2-1.7 wt% Sn and 0.05-0.50 wt% Fe. The ranges of Nb and Fe overlap the presently claimed range at 0.65-1.5 wt% and 0.3-0.5 wt%, respectively. The range of Sn taught by Anada et al is broader than the presently claimed range. However, it would have been within the expected skill of a routineer in the art to have optimized the composition within the broad range disclosed by Anada et al because Sn was known to affect the strength and corrosion resistance of the alloy (see paragraph 14 of machine translation of Nomoto et al (JP 08-067954)). Changes in temperature, concentrations, or other

process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. In re Aller et al (CCPA 1955) 220 F2d 454, 105 USPQ 233. Only result-effective variables can be optimized. In re Antonie 559 F2d 618, 195 USPQ 6 (CCPA 1977). See MPEP 2144.05 II. Though Anada et al fails to expressly teach that the alloy is used in a nuclear reactor, it is conventional in the art to use Zr-alloys as nuclear fuel cladding (see e.g.- Mardon et al, Nomoto et al, etc.).

Regarding claim 14, Anada et al teach (see English abstract) that the alloy contains 0-0.10 wt% Ni.

Regarding claim 15, Anada et al teach (see English abstract) that the alloy contains 0.05-0.30 wt% Cr.

Regarding claims 17-21 and 24, the conventional use of the Zr-alloys is as a nuclear fuel cladding, which is part of a nuclear fuel assembly.

Regarding claims 22, 23, 25 and 26, conventional fuel rod claddings have multiple layers where the inner-most layer is made of a pure Zr or a Zr-0.4Fe alloy (for support see Van Swam at col 7, lines 45-49 and Figure 2B). The Zr or Zr-0.4Fe alloy possess less strength, and thus, less ductility, than the alloy of Anada et al (for support see Garde et al '308 at col 4, lines 40-44).

13. Claims 13 and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isobe et al (US 5,912,935).

Isobe et al teach (see abstract) a Zr-alloy that contains 0.6-2.0 wt% Nb, 0.5-1.5 wt% Sn and 0.05-0.3 wt% Fe. The range of Fe overlaps the presently claimed range at

0.30 wt%. The ranges of Nb and Sn taught by Isobe et al are broader than the presently claimed range. However, it would have been within the expected skill of a routineer in the art to have optimized the composition within the broad ranges disclosed by Isobe et al because Nb and Sn were known to affect the strength and corrosion resistance of the alloy (see paragraphs 14 and 18 of machine translation of Nomoto et al (JP 08-067954)). Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. In re Aller et al (CCPA 1955) 220 F2d 454, 105 USPQ 233. Only result-effective variables can be optimized. In re Antonie 559 F2d 618, 195 USPQ 6 (CCPA 1977). See MPEP 2144.05 II.

Regarding claims 17-21 and 24, Isobe et al teach (see abstract) that the alloy is used as a nuclear fuel cladding tube, which is part of a nuclear fuel assembly.

Regarding claims 22, 23, 25 and 26, Isobe et al teach (see abstract) that the alloy is used as a nuclear fuel cladding tube. Conventional fuel rod claddings have multiple layers where the inner-most layer is made of a pure Zr or a Zr-0.4Fe alloy (for support see Van Swam at col 7, lines 45-49 and Figure 2B). The Zr or Zr-0.4Fe alloy possess less strength, and thus, less ductility, than the alloy of Isobe et al (for support see Garde et al '308 at col 4, lines 40-44).

14. Claims 13 and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mardon et al (US 5,023,048).

The teachings of Mardon et al are described above in paragraph no. 9. The portion of the presently claimed range not taught by Mardon et al, more than 0.65 to 1.6

wt% Nb and more than 0.65 to 0.85 wt% Sn, would have been obvious to one of ordinary skill in the art because the prior art range is close enough, e.g.- 0.65 vs 0.651 wt% Nb that it would have been expected to have the same properties, see MPEP 2144.05.

Regarding claims 17 and 19, Mardon et al teach (see abstract and title) that the alloy is used as a fuel rod sheath in a nuclear reactor.

Regarding claims 18 and 20, Mardon et al teach (see abstract) that the alloy is used as a fuel rod sheath, which is part of a nuclear fuel assembly.

Regarding claims 21 and 24, Mardon et al teach (see abstract) that the alloy is used as a fuel rod sheath, which is a cladding (see Figure).

Regarding claims 22, 23, 25 and 26, Mardon et al teach (see col 2, lines 55-59) that the inner tubular layer (see Figure) is made of a Zr-alloy of conventional type. Conventional inner layers were made from pure Zr or a Zr-0.4Fe alloy (for support see Van Swam at col 7, lines 45-49 and Figure 2B). The Zr or Zr-0.4Fe alloy possess less strength, and thus, less ductility, than the alloy of Mardon et al (for support see Garde et al '308 at col 4, lines 40-44).

Response to Arguments

15. Applicant's arguments with respect to claims 13-26 have been considered but are moot in view of the new ground(s) of rejection.

16. The above rejections under 35 USC 103 can be overcome by a showing of comparison data that within the presently claimed narrow ranges the present invention provides unexpectedly good properties over the prior art alloys.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-Th 6:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
Art Unit 1742

hdw
February 14, 2003

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700